Metrology Technician Training Program Outline TDS

INTRODUCTION TO MEASUREMENT AND CALIBRATION
- Development and concerns of metrology
- Standards and standardization
- Managing the metrology system
- Making good measurements: Elements of a measurement system
- Units and measurement instruments

PRECISION ELECTRICAL MEASUREMENT
- Basic DC and low frequency measurement
- Standards and traceability
- Practical Considerations for Precision Electrical Measurement
- Sources of measurement error

PRECISION TEMPERATURE MEASUREMENT
- Heat and temperature
- Temperature scales
- Thermometers
- Related heat sensing and measuring instruments

PRECISION PRESSURE/VACUUM MEASUREMENT
- Pressure fundamentals
- Types of pressure gauge
- Pressure measurement devices
- Transducers
- Principles of vacuum

PRECISION HUMIDITY MEASUREMENT
- Traceability
- Key terminology
- Humidity measuring instruments
- Sensors
- Accuracy of the measurement
- Calibration of Humidity measuring instruments
- Measurement uncertainty

PRECISION TORQUE/FORCE MEASUREMENT
- Stress and strain
- Characteristics & operations of a load cell
- Torque concepts and applications
- Torque testers calibration
- Torque auditing

MEASUREMENT UNCERTAINTY
- Uncertainty budgets
- Essentials of expressing measurement uncertainty
- Specification
- Risk analysis
- Related statistical tools
- Standards
- Software
- Features and benefits

AC/DC CALIBRATION & METROLOGY

- Basic concepts including; power produced by voltage
- Using AC-DC transfer standards
- Inductance and capacitance
- Immittance and AC ratio

TEST EQUIPMENT OPERATION AND CALIBRATION

- Operational safety
- Principles of operation
- Block diagrams
- Measurement applications
- Theory of operation
- General calibration methods
- Voltage
- Current
- Resistance
- Advanced measurements of power
- Frequency
- Component testing
- Waveform analysis
- Spectrum analysis
- Use of signal generators
- Interval analysis